Space Weather Forecast

Issued on Wednesday, 30 November 2022 at 13:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: G1/Minor Geomagnetic Storm intervals likely initially, reducing later.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with several low levels common-class flares. There are currently three sunspot regions on the visible disc. One numbered region in the northwestern hemisphere, and two small and simple NEW regions are also present. One follows shortly behind the aforementioned numbered region, and the other in the southeast heading toward the central meridian, all active regions are small and simple.

No new Earth-directed coronal mass ejections have been observed in available imagery, though we await computation of 3 whcih were ejected from the Sun late on 29th.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of positive coronal hole High Speed Stream influences. Solar wind speeds have been either Elevated or Strong due to CH49/+. The interplanetary magnetic field, Bt, rose from weak to moderate. The north south component ranged from weakly positive to weakly negative but with no sustained negative periods. Geomagnetic activity was mostly Unsettled to Active (Kp 3-4), but with one quiet interval (Kp 2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed during the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain Low over the forecast period, with a isolated common-class flares considered likely, with a very slight chance of isolated moderate-class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections are expected during the period, though several are currently being computed. Solar winds are currently strong due to the connection with coronal hole 49. The next solar wind enhancement is expected either late on day 1 (30th Nov) or early on day 2 (1st Dec) due to the arrival of the high speed stream from coronal hole 51, with speeds up to 600-700 km/s. Solar wind speeds then falling back to slightly elevated or background by the end of day 4 (3rd).

Geomagnetic activity is expected to be Unsettled to Active with likely isolated G1/Minor storm intervals due to the onset of coronal hole 51 during either day 1 or day 2 (30th or 1st), with a slight chance of G2/Moderate storms. The chance for G1/Minor storming intervals then reduces into day 3 and beyond due to the waning effects of coronal hole 51.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected during the forecast period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	60	30	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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